



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/801,825	03/09/2001	Yasuhiko Kojima	P 276646	1431
909	7590	09/15/2005	EXAMINER	
PILLSBURY WINTHROP SHAW PITTMAN, LLP P.O. BOX 10500 MCLEAN, VA 22102			EL ARINI, ZEINAB	
			ART UNIT	PAPER NUMBER
			1746	
DATE MAILED: 09/15/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/801,825	KOJIMA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Zeinab E. EL-Arini	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 August 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-9,17-19 and 21-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-9, 17-19, and 21-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Applicant's submission filed on 08/26/05 has been entered.

Claims 1, 3-9, 17-19, and 21-30 are pending.

The rejection under 35 U.S.C. 112, first paragraph stated in paper No. 060905 has been withdrawn in view of applicant's amendment.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3-9, 17-19 and 21-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen et al. (US 2001/0009154 A1) in combination with Ivankovits et al. (5,213,621) and Senzaki et al. (6,090,960).

Nguyen et al. disclose a method for cleaning the interior surfaces of metal-organic chemical vapor deposition chamber. The reference discloses oxidizing the metal deposition byproducts on the surface to be cleaned, introducing cleaning vapor into the chamber to volatilize the oxidized metal deposition byproducts, and removing the deposition byproducts, the chamber (claim 5), heating the wall, and the temperature (claims 28-30) as claimed. See the abstract, Figs. 1-3, and the claims. The reference does not teach the subliming the metal complex on the heated wall under a reduced pressure and the exhausting step. Nguyen et al. do not disclose the repeating and the confirming steps as claimed.

Ivankovits et al. as discussed supra in paper No. 082404 disclose a process comprises contacting the surface to be cleaned with an effective amount of cleaning agent comprising partially halogenated or fully halogenated linear or branched carboxylic acid, at a temperature sufficient to form volatile metal-complexes on the surface of the substrate to be cleaned. The volatile metal-complexes are sublimed from the surfaces of the substrate providing a clean, substantially residue-free surface. The reference teaches the cleaning agent, (claims 3, 4), the metal (copper), and the additive includes oxygen (claims 7, 8), The temperature (claim 18) and the pressure (claim 19). See the abstract, col. 2, lines 37-63, col. 2, line 67- col. 7, line 27, and the claims.

It would have been obvious for one skilled in the art to use the subliming and forming a metal complex steps taught by Ivankovits et al. to clean the chemical vapor deposition equipment or the physical vapor deposition equipment of Nguyen et al , because said vapor deposition equipment are made of quartz which is crystallized silicon oxide, and the substrates taught by Ivankovits et al. include, but are not limited to silicon, silicon oxide,----, which is functionally equivalent to the Nguyen et al. chamber and the substrate inside the chamber . This is also because Nguyen et al. also disclose cleaning the chamber and cleaning the substrate inside the chamber. One skilled in the art would repeat the steps to obtain optimum results.

Nguyen et al. and the Ivankovits et al. do not disclose the copper material as claimed (claims 22-23).

Senzaki et al. disclose a method of applying chemical vapor deposition copper to integrated circuit substrates using a precursor as claimed. See the abstract, col. 4, lines 1-22, col. 7, lines 17-31, and claims 1, 10.

It would have been obvious for one skilled in the art at the time applicants invented the claimed process to use the copper taught by Senzaki et al. in the Nguyen et al. in combination with Ivankovits et al. to obtain the claimed process. This is because it is known in the art to use the copper material as claimed in the chemical vapor deposition chamber.



***Response to Arguments***

1. Applicant's arguments with respect to claims 1, 3-9, 17- 19, and 21-30 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zeinab E. EL-Arini whose telephone number is (571) 272-1301. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Application/Control Number:  
09/801,825  
Art Unit: 1746

Page 9

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Zeinab E. EL-Arini*

Zeinab E. EL-Arini  
Primary Examiner  
Art Unit 1746

ZEE

09/12/05